

FIG. 1

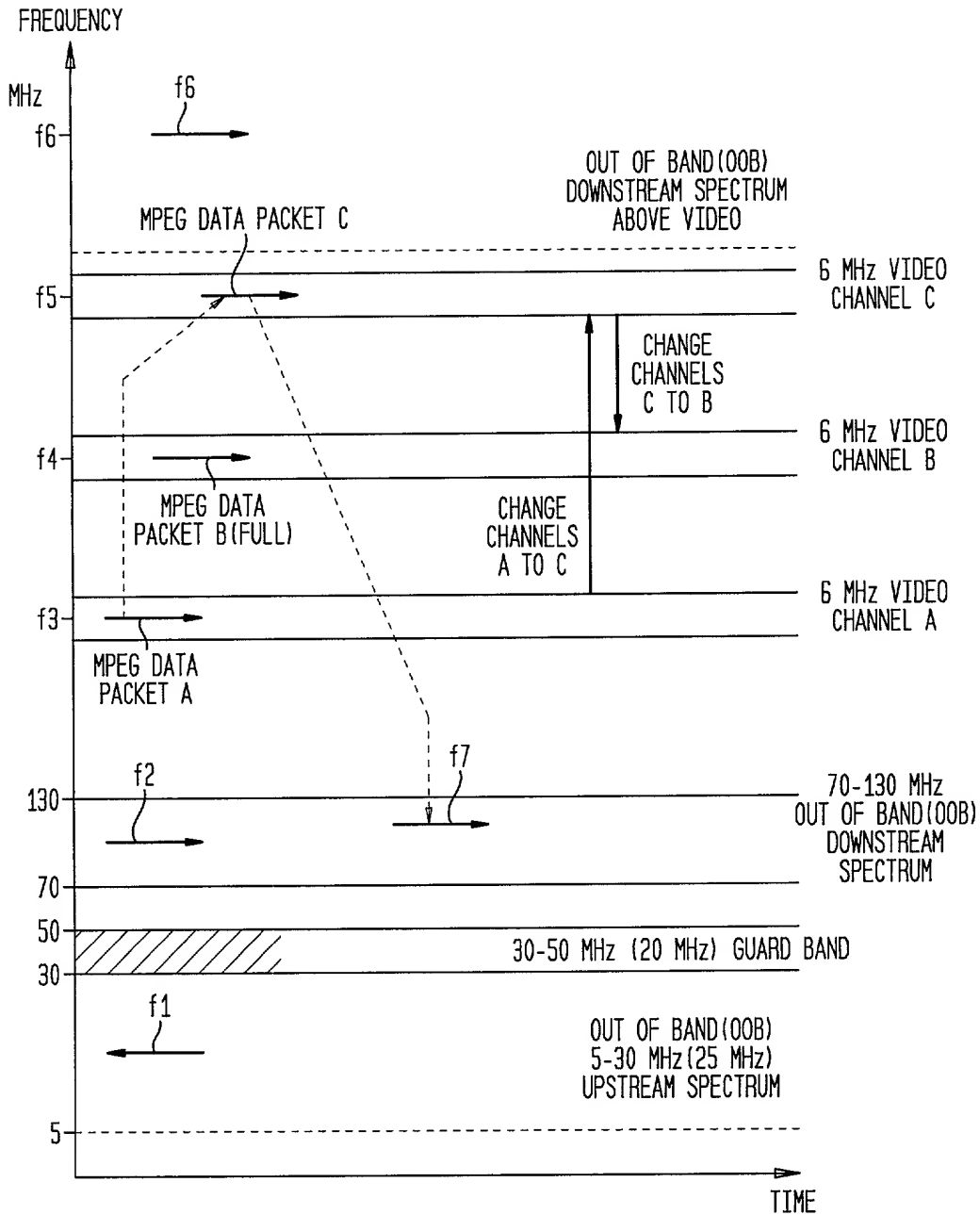


FIG. 2
(PRIOR ART)

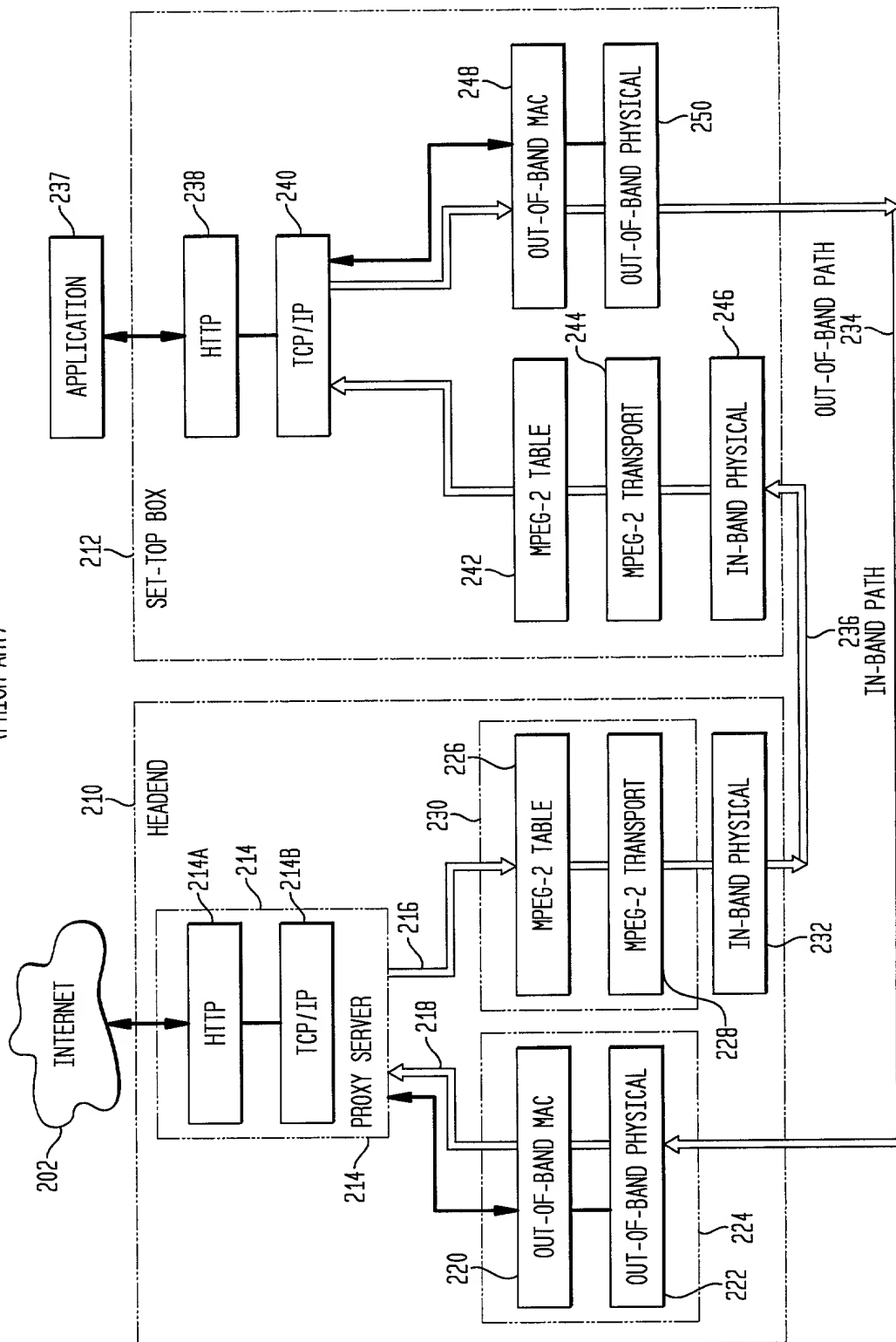


FIG. 3

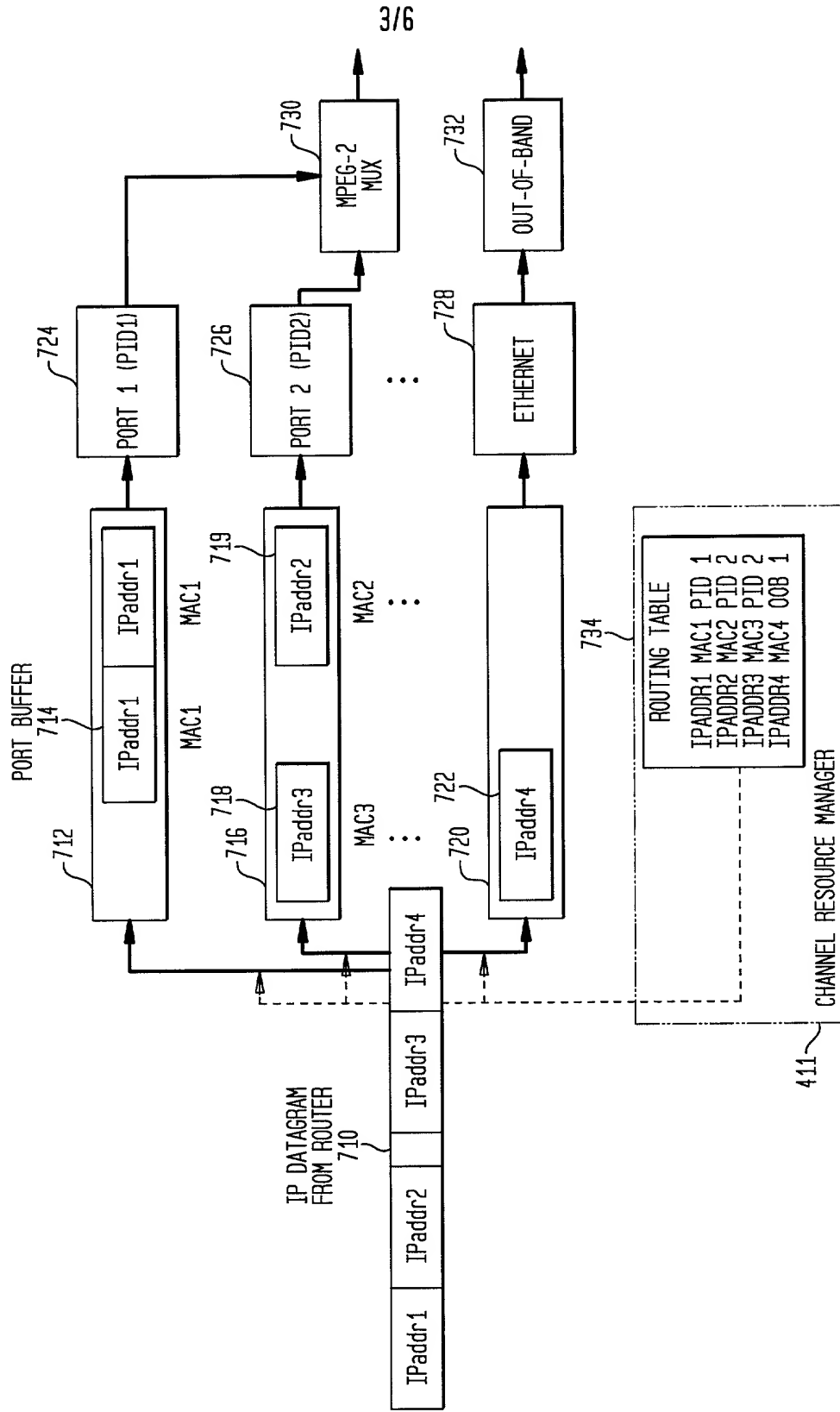


FIG. 4

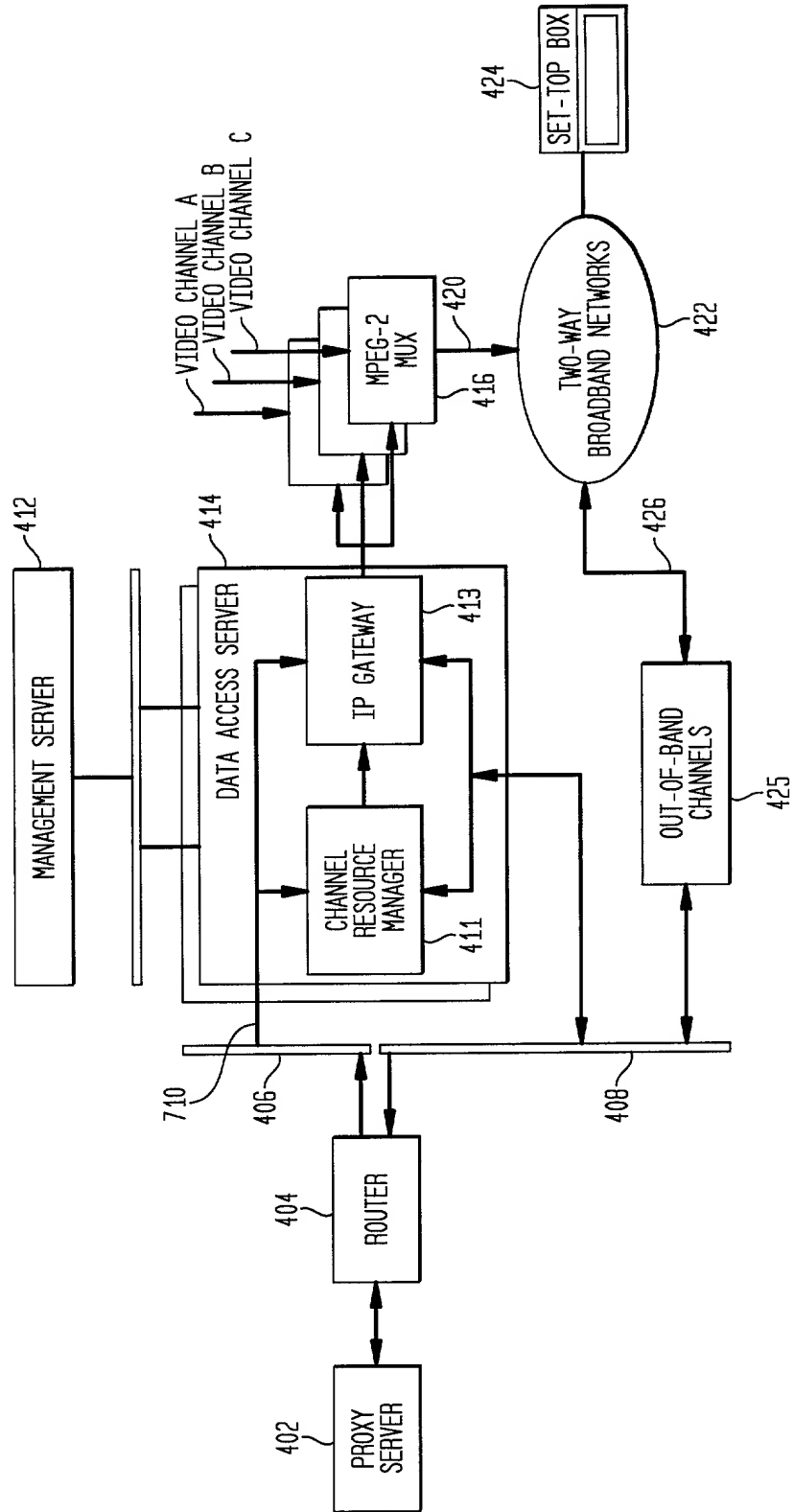
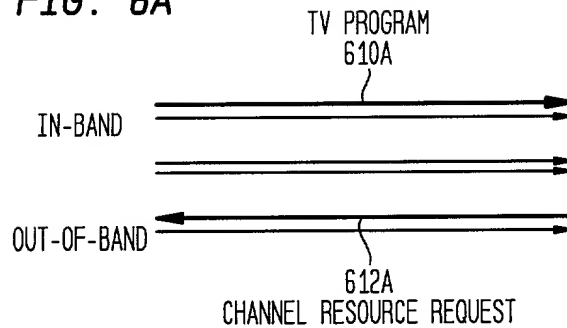
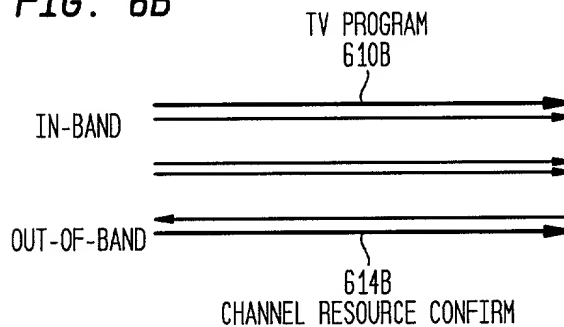
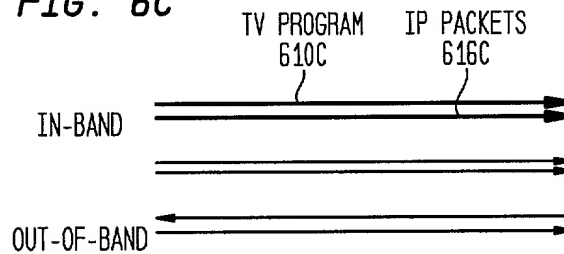


FIG. 6A

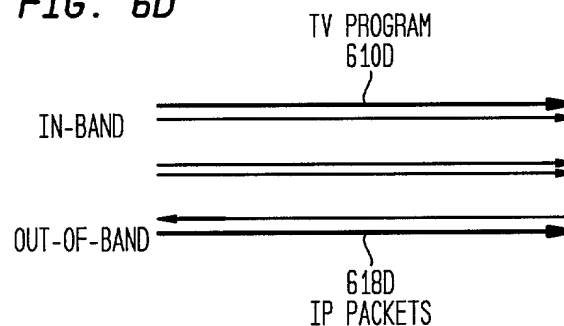
STEP 1 UPON CHANNEL CHANGE AND IP TRAFFIC STB SENDS CHANNEL RESOURCE REQUEST USING OOB UPSTREAM

FIG. 6B

STEP 2 SERVER SENDS CHANNEL RESOURCE CONFIRM USING OOB DOWNSTREAM

FIG. 6C

STEP 3 SERVER ROUTES THE IP PACKETS TO THE RIGHT IN-BAND TRANSPORT

FIG. 6D

STEP 4 SERVER CAN ALSO ROUTES THE IP PACKET TO THE OOB DOWNSTREAM

TABLE 1
CHANNEL RESOURCE REQUEST MESSAGES

Channel Resource Request Message(){		
commonDescriptorHeader(){		
resourceRequestID	2	STB assigned ID for message
resourceDescriptorType	"0x0004"	PhysicalChannelResourceDescriptor
resourceNum	2	NOT USED
associationTag	2	NOT USED
resourceFlags	"0x42" (or "0x46")	Use only current channel "non-Negotiable" (Can use any channel "Negotiable")
resourceStatus	1	NOT USED
resourceLength	"0x0006"	Total length of the descriptor
resourceDataFieldCount	"0x0001"	Only one resource descriptor
}		
PhysicalChannelResourceDescriptor(){		
channelID	4	programID(2)+transport_streamID(2)
direction	"0x0000"	(downstream)
}		
}		

TABLE 2
CHANNEL RESOURCE CONFIRM MESSAGES

Channel Resource Confirm Message() {		
commonDescriptorHeader() {		
resourceRequestID	2	STB assigned ID for message
resourceDescriptorType	"0x0003"	MPEGProgramResourceDescriptor
resourceNum	2	Assigned by server (0x8000-0x8fff)
associationTag	2	NOT USED
resourceFlags	"0x42" (or "0x46")	Use only current channel "non-Negotiable" (Can use any channel "Negotiable")
resourceStatus	1	See status table
resourceLength	"0x0010"	Total length of the descriptor
resourceDataFieldCount	"0x0001"	Only one resource descriptor
}		
MPEGProgramResourceDescriptor() {		
mpegProgramNum	2	ProgramID
mpegIntPid	2	TransportStreamID
mpegCaPID	2	NOT USED
elementaryStreamCount	"0x0001"	Only one data PID per TS
mpegPID	2	PID for the data "FFF" for Out-of-Band
stream_type	"0x0D"	DVB Multi-Protocol Encapsulation
reserved	"0x00"	
associationTag	2	NOT USED
mpegPCR	"0xffff"	No PCR
}		
}		